

BOTANICAL GAZETTE

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Undescribed plants from Guatemala. XII.

JOHN DONNELL SMITH.

WITH PLATES I AND II.

M. Casimir de Candolle has contributed to this article diagnoses and descriptions of new species among the MELIACEÆ and PIPERACEÆ submitted to him for elaboration.

Peltostigma pentaphyllum.—Petioles half to two-thirds as long as leaves; leaflets 5, obovate-oblong to elliptical-oblong ($6-8 \times 2-2.5^m$), the exterior pair reduced, acuminate, tapering to petiolule, entire: peduncle with 3-flowered cyme subequalling petiole, pedicels ebracteate: sepals chiefly 4; 2 exterior herbaceous, ovate ($1-2^l$): petals chiefly 5, exceeding interior sepal (8^l): ovary 7-10-locular, truncate-conic, as broad as gynophore (3^l); stigmas before anthesis sacciform, oval (1.5×1^l); capsule globose, the matured not seen.—A tree 15-21^{ft} high with spreading branches. *P. pteleoides* Walp., which has been the monotype of the genus, and recorded only from Jamaica, differs by short petioles, ternate smaller leaflets, compound inflorescence equalling leaves, smaller flowers, less numerous and less unequal parts of perianth.—Zamorora, Depart. Santa Rosa, alt. 5,500^{ft}, March 1892 and April 1893, Heyde & Lux, (ex Pl. Guatamal. qu. edid. J. D. S. 3,058 and 4,437).

Cabralea insignis C. DC.—Foliis maximis modice petiolatis abrupto-pinnatis 19-jugis, foliolis oppositis sessilibus anguste oblongis basi æquali subacutis obtusisve apice obtusiuscule cuspidatis utrinque glabris, nervis secundariis subpatulis tenuibus utrinque 25 et plus, fructu globoso glabro loculis monospermis.—Arbor? Folium totum ad 65^{cm} longum. Foliola ad 14.5^{cm} longa 2.5^{cm} lata in sicco membranacea sub-

pellucida læte virescentia subtiliter pellucido-punctulata verruculis porosis destituta. Rhachisteres. Petiolus 10^{cm} longus. Fructus indehiscens circiter 4.5^{cm} in diametro, lævis in sicco fuscescens. Semina elliptica circiter 18^{mm} longa. Cotyledones carnosi coriacei elliptici, radícula intra cotyledones immersa.—Species magnitudine foliorum insignis, *C. pallentis* C. DC. subaffinis.—Acatepeque, Depart. Zacatepequez, alt. 4,300^{ft}, March 1892, J. D. S., no. 2,570.

Guarea Luxii C. DC. —Foliis modice petiolatis 3-jugis, foliolis brevissime petiolulatis oppositis lanceolatis subæqualibus supra glabris subtus junioribus adpresse pilosulis cito glabris, rhachi adpresse hirsuta, paniculis quam folii dimidium brevioribus simplicibus modice pedunculatis spicatum cymuligeris, floribus longiuscule pedicellatis, calyce cupuliformi extus adpresse hirtello margine brevissime acute 4-denticulato, petalis glabris oblongis apice acutis, tubo glabro cylindrico margine obtuse 8-crenulato, antheris oblongis glabris, ovario glabro ovato stipitem superante apice in stylum glabrum attenuato.—Frutex aut arbor 4–6^m alta, ramulis junioribus adpresse pubescentibus cito glabris lævibus subcinerascentibus, fructiferis in sicco circiter 2^{mm} crassis. Foliola in sicco membranacea firmulave subpellucida crebre minute pellucido-punctulata ad 9.5^{cm} longa et ad 3^{cm} lata, nervis secundariis subpatulis tenuibus utrinque circiter 15. Petioli vix 2^{mm} longi. Petioli ad 5^{cm} longi. Flores circiter 3^{mm} longi. Petala 4 æstivatione valvata in sicco rubescentia. Antheræ 8 tubi denticulis oppositæ parvæ. Ovarium 4-loculare loculis uniovulatis. Capsula in specimine nondum matura subglobosa glabra circiter 12^{mm} longa.—Species *G. pedicellatæ* C. DC. et *G. Shomburgkii* C. DC. affinis.—S. Rosa, Depart. S. Rosa, alt. 3,000^{ft}, March 1892, Heyde & Lux, no. 3,276.

Trichilia Donnell-Smithii C. DC. —Foliis modice petiolatis 4–5-jugis, foliolis breviter petiolulatis plerumque oppositis subæqualibus e basi cuneata obovato-oblongis apice rotundatis obtusisve vel breviter obtusiuscule acuminatis utrinque breviter haud dense pilosulis, paniculis e basi decompositis quam petioli brevioribus, floribus longiuscule pedicellatis, calyce acute profunde 5-dentato extus dense hirtello, petalis 5 extus adpresse hirtellis ellipticis apice subacutis, staminibus medium usque in tubum urceolatum glabrum connatis sursum lacinosus laciniis utrinque pilosis apice acute 2-dentatis, an-

theris 10 glabris oblongis apice acutis, ovario globoso glabro in disco carnosio glabro subcupuliformi insidente 3-loculari, loculis 2-ovulatis, capsulæ glabræ 3-valvatæ loculis monospermis, seminibus ellipticis arilloque rubris.—Ramuli juniores hirsuti dein subglabri in sicco fuscescentes elenticellosi. Folia ad 16^{cm} longa. Foliola ad 8^{cm} longa ad 2.5^{cm} lata in sicco firma subopaca epunctata, nervis secundariis plerumque alternis subadscendentibus utrinque circiter 8–10. Rhachis cum petiolo 3^{cm} longo teres hirtella. Floris pedicellus 2^{mm} longus. Petala 9^{mm} longa in sicco flavicantia. Antheræ inter lacinarum dentes sessiles. Ovarii loculi oppositiseptali, ovulis superpositis. Stylus glaber ovario æquilongus. Seminis testa dura. Embryo intra perispermium album carnosum inclusus, cotyledonibus foliaceis elliptico-rotundatis basi breviter cordulatis, radícula exserta brevi, plumula minima.—Species quoad floris structuram in sectione EUTRICHILIA (*C. DC. monogr.*) collocanda sed propter semen perispermium includens ab omnibus Trichiliis quorum fructus notus discrepans.—Laguna Amatitlan, Depart. Amatitlan, alt. 3,900^{ft}, March 1890, J. D. S., no. 1,908; Volcan de Fuego, Depart. Zacatepequez, alt. 5,500^{ft}, March 1892, J. D. S., 2,504.

Var. β . **Uniovulata** C. DC.—Staminum laciniis extus glabris, ovarii loculi uniovulati.—Folia inferiora 1–2-juga cum impari foliolis lateralibus multum majore ad 9^{cm} longo et ad 5^{cm} lato, superiora ut in specie.—Guarda Viejo, Depart. Guatemala, alt. 5,000^{ft}, Febr. 1890, J. D. S., no. 1,909.

Trichilia Heydeana C. DC.—Foliis modice petiolatis 3–4-jugis, foliolis subæqualibus brevissime petiolulatis lanceolato-oblongis basi æquali acutis apice obtuse cuspidatis supra puberulis subtus dense molliter fulvescente-pubescentibus paniculis quam folia multum brevioribus dense pubescentibus, fere a basi ramosis, floribus breviter pedicellatis, calyce extus dense pubescente profunde acute 5-dentato, petalis 5 extus pubescentibus lanceolatis, staminibus inferne in tubum brevem glabrum cum disco connatum coalitis sursum laciniosis laciniis apice obtusis utrinque et intus densius hirsutis, antheris hirtellis avatis apice acutis, ovario disco lato supra villosio insidente villose 3-loculari.—Arbor 10–12^m alta. Ramuli juniores adpresse fulvescente-hirsuti, dein glabri in sicco fuscescentes lenticellis concoloribus. Limbi ad 12^{cm} longi ad 4.5^{cm} lati in sicco subcoriacei opaci crebre pellucido-punctulati, nervis secundariis utrinque circiter 12 patule subadscendentibus.

Petioli ad 2^{mm} longi. Rhachis cum petiolo 3^{cm} longo teres dense fulvescente-hirsuta. Paniculæ rami ad 7^{cm} longi fere a medio brevissime ramulosi, ramulis apice dense cymuligeris. Florum pedicelli 1^{mm} parum superantes. Alabastra subglobosa. Calycis dentes lanceolati. Petala circiter 2^{mm} longa in æstivatione imbricata. Antheræ 10 lacinias subæquantes.—Species *T. Wawranæ* C. DC. et *T. Glaziovii* C. DC. affinis.—Naranjo, Depart. Escuintla, alt. 300^{ft}, March 1892, J. D. S., no. 2, 574; Rio Esclavos, Depart. S. Rosa, alt. 3,000^{ft}, May 1892, Heyde & Lux, no. 3,274; S. Rosa, alt. 3,000^{ft}, May 1892, Heyde & Lux, no. 3,275.

Cedrela impari-pinnata C. DC. — Foliis longe petiolatis impari-pinnatis 3–5-jugis, foliolis lanceolatis basi æquali acutis apice acute acuminatis subæqualibus utrinque puberulis lateralibus oppositis subsessilibus rhachi puberula, capsula oblonga glabra 4-valvata seminibus elliptico-oblongis.—Ramuli juniores puberuli dein glabri læves in sicco fuscescentes, cortice tenui. Folia cum impari ad 34^{cm} longa. Foliola in sicco membranacea subpellucida subtiliter pellucido-punctulata ad 8^{cm} longa ad 3^{cm} lata, nervis secundariis subpatulis utrinque circiter 12. Capsula circiter 5^{cm} longa valvis lanceolatis medio circiter 12^{mm} latio. Semen cum ala 3^{cm} longum, ala tenuissima. Species foliis impari-pinnatis insignis, *C. Vellozianæ* Rœm. quoad foliorum formam affinis.—Volcan de Fuego, alt. 6,000^{ft}, March 1892, J. D. S., no. 2, 571.

Oreopanax Taubertianum.—Primordial leaves broadly triangular; petioles robust, base abruptly broadly dilated and amplexicaul; leaflets digitately 5–9, chiefly 7, obovate-elliptical (6–9 × 2–3ⁱⁿ), acutely acuminate, tapering to petiolule, coarsely and sharply toothed above middle, membranaceous, upper surface furfuraceous or glabrate, the lower stellate-pubescent, areolation minute and pellucid-punctulate: staminate racemes elongated (16–24ⁱⁿ), curving; pedicels pubescent, crowded, slender, thrice exceeding small (3^l) globose heads; petals 4–5, shorter than filaments, twice longer than single style; bracteoles surpassing ovary by their pubescent tips, the subtending one narrowly obovate; abortive ovary shortly obpyramidate: fruiting racemes somewhat shorter, pedicels longer (9–15^l), heads 5–12-baccate; berries ovoid, crowned with 5 semiconnate styles, by abortion 2–5-celled and with as many or fewer nucules, albumen ruminant.—Compared in the Berlin Herbarium by Dr. Taubert with specimens, authenticated

by M. Marchal, of *O. Xalapense* Dcne et Planch. The only other species described with digitate leaflets, *O. Thibautii* Hook. f., is reduced by M. Marchal to a form of *O. Xalapense* (cf. Bull. Soc. Roy. Bot. Belg. 30: 282).—A tree 30–40^{ft} high with branchlets half-encircled by the scars of fallen leaves, known to the natives as *Mata-gente*.—Barranca de Corona, Depart. Guatemala, alt. 4,700^{ft}, Febr. 1890 and 1892, J. D. S., nos. 1,905 and 2,664; S. Rosa, alt. 4,000^{ft}, March 1892, Heyde & Lux, no. 3,096; Chiapas, Depart. S. Rosa, alt. 3,500^{ft}, Sept. 1892, Heyde & Lux, no. 3,967.

Ardisia paschalis.—Glabrous: leaves obovate or elliptical (6–7.5 × 3–3.5ⁱⁿ), obtuse, narrowing to short canaliculate marginate petiole, entire, coriaceous, nitid, rubro-punctate and -striolate: panicle terminal, exceeding leaves; flowers racemose on primary branches, single, 5-merous, rubro-maculate, pedicels longer and in fruit nodding: divisions of calyx convolute, round-ovate (1.5^l): corolla in præfloration dextrorsely contorted, yellowish-white, the conspicuous stellate centre thickened by dark-yellow pigment-cells, tube minute (half a line) and equalling explanate throat, obtuse segments oblong (4^l) and revolute: stamens slightly monadelphous at apex of tube; anthers ovoid-oblong (2^l), twice exceeding filaments, apiculate, before anthesis cohering in a cone by longitudinal sutures of dehiscence: ovary ovoid, style filiform: fruit pisiform (3–4^l), endocarp crustaceous.—A shrub 6–9^{ft} high, with fragrant and showy flowers that are singularly large for the genus, called by the natives *Chilil*, and used during Easter week for decorating the altars of the churches.—Cuyotenango, Depart. Suchitepequez, alt. 1,100^{ft}, April 1892, J. D. S., no. 2,465; S. Rosa, alt. 3,000^{ft}, May 1892, Heyde & Lux, no. 3,023; Cerro Gordo, Depart. S. Rosa, alt. 3,500^{ft}, Sept. 1892, Heyde & Lux, no. 3,988; Casillas, Depart. S. Rosa, alt. 4,000^{ft}, May 1893, Heyde & Lux, no. 4,537. Collected also along Rio Permejo, S. Pedro Sula, Honduras, July 1887, by Dr. C. Thieme.

EXPLANATION OF PLATE I.—Fig. 1, branch with flowers. Fig. 2, branch with fruit. Fig. 3, portion of leaf. Fig. 4, flower-bud. Fig. 5, open flower. Fig. 6, stamens. Fig. 7, pistil. Fig. 8, half of a corolla with stamens. Fig. 9, vertical section of fruit. (Figs. 1 and 2 are natural size; in the others the objects are variously enlarged.)

Piper Luxii C. DC. (§ III. STEFFENSIA C. DC.)—Foliis modice petiolatis elliptico-lanceolatis basi inæquali acutis supra præsertim ad nervos subtusque densius breviter hirsutis,

nervo centrali vix ad $\frac{1}{2}$ longitudinis suæ nervos adscendentes utrinque 5 mittente, petiolo hirsuto basi vaginante, pedunculo quam petiolus brevior, amento ipso per anthesin limbi dimidium vix æquante apice mucronato, bractea obovato-oblonga apice rotundata utrinque dense villosa, filamentis elongatis antheris ellipticis quam filamenta pluries brevioribus, ovario conico parce piloso apice in stylum circiter eo æquilongum glabrum attenuato, stigmatibus linearibus recurvis. — Ramuli juniores dense villosi dein subglabrati, in sicco nigrescentes læves, amentiferi circiter 2^{mm} crassi, collenchymate in cortice continuo zona fibrosa continua intus aucto, fasciculis intramedularibus uniseriatis. Limbi in sicco membranacei nigrescentes pellucido-punctulati ad 20^{cm} longi ad 9^{cm} lati, juniores læves dein supra subbullati. Petiolus ad limbi latus longius circiter 2^{cm} longus. Amentum per anthesin circiter 6^{mm} crassum. Stamina 4 filamentis longis exsertis. Stigmata 3.—Species *P. Irazuani* C. DC. proxima, ab eo nervorum numero bractea apice obtusa ac longius densiusque pubescente et antheris oblongis discrepans.—San Miguel Uspantán, Depart. Quiché, alt. 6,000^{ft}, April 1892, Heyde & Lux, no. 3,462.

Piper Uspantanense C. DC. —Foliis breviter petiolatis elliptico-lanceolatis basi parum inæquali utrinque acutis apice longe acute acuminatis supra glabris subtus ad nervos nervulosque adpresse hirtellis nervo centrali circiter medium-usque nervos utrinque 4 alternos adscendentes nervulosque validos mittente, petiolo basi ima vaginante dorso hirtello, pedunculo quam petiolus circiter $\frac{1}{3}$ longiore puberulo, amento ipso limbi dimidium vix æquante apice mucronulato, bractæ pelta triangulari margine dense et longiuscule hirsuta pedicello extus piloso, antheris subglobosis quam filamenta brevioribus, ovario glabro, bacca glabra.—Suffrutex 1–1.5^m altus, ramulis junioribus hirtellis dein glabris punctulis albis conspersis, 2.5^{mm} crassis in sicco teretibus, collenchymate in cortice subcontinuo zonaque fibrosa discontinua intus aucto, fasciculis intramedullaribus uniseriatis. Limbi in sicco membranacei obscure virescentes subopaci creberrime pellucido-punctati ad 20^{cm} longi. Amenta nondum matura 2^{mm} crassa. Stamina 4 connectivo supra loculos brevissime producto. Bacca tetragona stylo destituta vertice in sicco rufescens. Stigmata 3.—San Miguel Uspantán, alt. 8,000^{ft}, April 1892, Heyde & Lux, no. 3,460; Cerro Gordo, Depart. S. Rosa, alt. 3,500^{ft}, Sept. 1892, Heyde & Lux, no. 3,827.

Piper Yzabalanum C. DC. in Donnell Smith Enum. Pl. Guat. pars II.—Foliis longiuscule petiolatis ample ovatis basi inæquali cordulatis apice breviter acute acuminatis utrinque glabris, nervo centrali paulo ultra medium nervos utrinque 7 patule adscendentes mittente, petiolo glabro limbum usque vaginante, pedunculo quam petiolus adultus 4-plo brevior glabro, amento quam folium pluries brevior apice breviter mucronato, bracteæ spathulatæ vertice inflexo triangulari glabro pedicello lato basi inter baccas producto et hirtello, bacca glabra vertice pulposa.—Ramuli glabri punctulis albis notati in sicco complanati 4–5^{mm} crassi, fasciculis collenchymatosis in cortice distinctis intus fibris aliquot auctis, fasciculis intramedullaribus uniseriatis. Limbi 18^{cm} longi circiter 12^{cm} lati in sicco membranacei pellucido-punctulati. Petioli circiter 4^{cm} longi. Amenta matura ad 6.5^{cm} longa 5^{mm} crassa. Baccæ subtetragonæ stylo destitutæ vertex pulposus in sicco ambitu subproductus. Stamina 4. Stigmata 3.—Boca del Polochic, Depart. Yzabal, alt. 200^{ft}, April 1889, J. D. S., no. 1,712.

Piper Heydei C. DC. (§V. POTOMORPHE C. DC.)—Foliis longe petiolatis adultis $\frac{1}{3}$ supra limbi basin peltatis ovato-rotundatis amplis basi rotundatis repando-subcordatis apice breviter acute acuminatis supra glabris subtus præsertim ad nervos nervulosque fulvescenti-hirsutis 14-plinerviis nervo centrali nervos adscendentes utrinque 3 supra limbi basin et ad $\frac{1}{4}$ longitudinis mittente cæteris nervis e petiolo divaricantibus, petiolo medium usque vaginante dorso apicem versus parce hirsuto, amentis apice ramuli sat longi glabri circiter 12-umbellatis longiuscule pedunculatis ipsis florentibus quam foliorum limbi pluries brevioribus, bracteæ pelta triangulari margine fulvescente hirsuta, antheris subglobosis, ovario glabro.—2^m altum. Folia juvenilia haud peltata basi cordata. Limbi in sicco firmule membranacei subopaci pellucido-punctulati 33^{cm} longi medioque lati. Petioli adulti circiter 16^{cm} longi. Ramuli amentiferi glabri verisimiliter axillares 16^{cm} longi. Amentorum pedunculi 5^{cm} longi. Amenta ipsa adhuc juvenilia inæquilonga ad 9^{cm} longa. Stamina 3 quorum 2 lateralia tertium posticum. Antheræ filamentis circiter æquilongæ. Ovarium ovatum apice attenuatum adhuc juvenile.—Species limbis subtus hirsutis, ramulis amentiferis multo longioribus et præsertim floribus 3-staminalibus a *P. peltato* L. valde discrepans.—San Miguel Uspantán, alt. 7,000^{ft}, April 1892, Heyde & Lux, no. 3,461.

PIPER TUBERCULATUM Jacq. ic. rar., var. δ . **obtusifolium** C. DC.—Foliis apice rotundatis cæterum ut in specie.—Frutex 3^m altus.—Rio Ocosito, Depart. Quezaltenango, alt. 250^{ft}, April 1892, J. D. S., no. 2,592; S. Rosa, alt. 3,000^{ft}, June 1892, Heyde & Lux, no. 3,464. Collected also near Grenada, Nicaragua, by Lévy, no. 93.

Peperomia macrophylla C. DC. — Foliis petiolatis anguste lanceolato-oblongis basi in petiolum decurrentibus apice acute acuminatis utrinque glabris pellucido-punctulatis penninerviis, nervo centrali fere a tota longitudine nervos adscendentes utrinque circiter 10 mittente, amentis ad ramos axillares aphyllis quam folia parum breviores laxè circiter 5 paniculatim dispositis ipsis breviter pedunculatis folii dimidium vix æquantibus, bractea suborbiculari centro brevissime pedicellata, ovario apice oblique scutatim complanato scutello elliptico apice obtuso in medio stigma carnosum gerente, bacca anguste cylindrica patenti glabra apice scutello persistente erecto subacute terminata.—Herba glabra caule basi decumbente e nodis radicante superne suberecta. Folia alterna. Limbi ad 20^{cm} longi et ad 3.5^{cm} lati in sicco membranacei subpellucidi basi in petiolum ad 3^{cm} longum angustati. Amenta matura in sicco 2^{mm} crassa, basi squamis lanceolatis deciduis fulta, inferiora 2 alterna superiora 2 opposita ultimum terminale. Pedunculi circiter 5^{mm} longi. Antheræ minutæ. Baccæ brevissime stipitatae cum scutello 1.5^{mm} longæ.—Palin, Depart. Amatitlan, alt. 3,560^{ft}, Feb. 1892, J. D. S., no. 2,578; Barranca de Eminencia, Depart. Amatitlan, alt. 1,400^{ft}, Feb. 1892, J. D. S., no. 2,579.

Peperomia violæfolia C. DC. — Foliis longe petiolatis e basi cordata inferioribus rotundatis superioribus ovatis apice acute acuminatis utrinque glabris 7–9-nerviis, amentis oppositifoliis sublaxifloris breviter pedunculatis glabris foliorum limbos parum superantibus, bractea orbiculari centro pedicellata, ovario emerso stipitato obovato-elliptico apice imo stigma minutum carnosum gerente, bacca elliptica breviter stipitata.—Herba glabra e stolone caules multos circiter 10^{cm} altos in sicco membranaceos ad 3^{mm} crassos dense agens. Folia alterna. Limbi in sicco tenuiter membranacei pellucidi haud crebre pellucido-punctati 6–7^{cm} longi 5–6.5^{cm} lati. Petioli ad 7^{cm} longi. Pedunculi circiter 1^{cm} longi. Amentia florentia in sicco membranacea pellucida 1.5^{mm} crassa. Ovarium stipite suo parum brevior. Bacca stipitem suum pluries superans circiter ad 1^{mm} longa. Palin, alt. 3,500^{ft}, Feb. 1892, J. D. S., no. 2,580.

Peperomia Sisiana C. DC.—Foliis modice petiolatis oblongo-lanceolatis basi acutis apice longiuscule anguste et subfalcatim acuminatis utrinque glabris junioribus margine ciliolatis 7-plinerviis nervis lateralibus utrinque 2 e basi uno ex $\frac{1}{4}$ longitudinis supra basin solutis, petiolo juniore parce hirtello, amentis adultis folia duplo superantibus filiformibus glabris densifloris, bractea orbiculari centro subsessile, ovario emerso apice scutatim aucto, scutello in medio stigmatifero apice acuminato, stigmatate minuto, bacca emersa patente cylindrica apice oblique rostellata.—Herba e basi radicante ramulos circiter 25^{cm} longos erectos apice parce hirtellos inferne glabros agens. Folia alterna. Limbi in sicco membranacei subpellucidi ad 9^{cm} longi et 3–3.5^{cm} lati. Petioli ad 1^{cm} longi. Amenta matura vix 2^{mm} crassa. Baccæ 1.5^{mm} longæ.—Species *P. Naranjoanæ* C. DC. proxima, forsan eadem cum amentis maturis longioribus, limbis basi acutis a *P. elongata* Kunth differt sed ejus quoque proxima.—Rio Sis, Depart. Suchitepequez, alt. 1,300^{ft}, April 1892, J. D. S., no. 2,584.

Peperomia San-Felipensis C. DC. —Foliis breviter petiolatis anguste lanceolatis basi et apice acutis utrinque glabris et nigro-punctulatis 5-nerviis, amentis terminalibus axillaribusque breviter pedunculatis glabris nigro-punctulatis subdensifloris ipsis folia circiter duplo superantibus, bractea orbiculari centro subsessili, ovario emerso sub apice oblique stigmatifero, bacca subglobosa glabra.—Herba repens glabra caulibus in sicco 1.5^{mm} crassis. Folia alterna. Limbi in sicco firmulo-membranacei subpellucidi 3–4^{cm} longi 8–10^{mm} lati nervis subtilibus. Petioli 6^{mm} longi. Pedunculi vix 5^{mm} longi. Amenta 1^{mm} crassa. Species *P. glabellæ* Sw. proxima limbis angustioribus nervorum numero ramulisque glabris ab ea discrepans.—San Felipe, Depart. Retalhuleu, alt. 2,050^{ft}, April 1892, J. D. S., no. 2,583.

Peperomia Heydei C. DC. —Foliis longissime petiolatis ovato-rotundatis basi cordatis apice rotundatis 9–11-nerviis utrinque glabris, amentis terminalibus axillaribusque glabris longe pedunculatis foliorum limbos circiter æquantibus, floribus annulatim dispositis, bractea orbiculari, ovario obovato apice oblique complanato oblique stigmatifero.—Herba glabra caule decumbente basi radicante in sicco tenuiter membranacea pellucida. Folia alterna. Limbi adulti ad 13^{cm} longi cum petiolis ad 20^{cm} longis in sicco tenuiter membranacei pellucidi. Pedunculi circiter 4^{cm} longi. Amenta in sicco membranacea

2^{mm} crassa. Bractea ovariumque glandulis pallidis conspersa.—Species *P. Gardnerianæ* Miq. affinis.—Laguna de Ayarza, Depart. Jalapa, alt. 8,000^{ft}, Sept. 1892, Heyde & Lux, no. 3,834.

Var. β . **minor** C. DC. — Foliis minoribus, limbis ad 9^{cm} longis in sicco paulo firmioribus, petiolis ad 6^{cm} longis, amentis foliorum limbos superantibus.—Estanzuela, Depart. S. Rosa, alt. 2,500^{ft}, Aug. 1892, Heyde & Lux, no. 3,835.

Peperomia Guatemalensis C. DC. — Foliis breviter petiolatis subrhombéo-lanceolatis basi cuneatis apice obtusiusculis supra glabris subtus pilosulis 5-nerviis nervis externis subtilibus, amentis terminalibus vel axillaribus pedunculatis glabris folia pluries superantibus densifloris, bractea elliptica paulo supra medium peltata subsessili, ovario rhachi impresso obovato apice oblique stigmatifero, bacca globosa glabra.—Herba erecta circiter 12^{cm} alta inter muscos crescens, caulibus pilosulis inferne radicantibus. Folia inferiora opposita superiora alterna. Limbi in sicco membranacei subopaci pelucido-punctulati 3–5^{cm} longi 1.5–2^{cm} lati. Petioli ad 4^{mm} longi. Pedunculi ad 8^{mm} longi. Amenta glabra ipsa matura circiter 10^{cm} longa in sicco 1.5^{mm} crassa.—Species *P. Bauerianæ* Miq. proxima.—Acatepeque, alt. 4,300^{ft}, March 1892, J. D. S., no. 2,587.

Peperomia Santa-rosana C. DC.—Foliis quaternis brevissime petiolatis e basi cuneata obovatis apice emarginatis utrinque glabris 5-nerviis, amentis terminalibus pedunculatis ipsis adultis folia pluries superantibus glabris, bractea orbiculari subsessili, ovario emerso in apice obtuso oblique stigmatifero, stigmatate minuto.—Herba erecta glabra. Caules in sicco complanati, amentiferi circiter 2^{mm} crassi, steriles ad 6^{mm} crassi. Limbi caulium fertiliū 2^{cm} longi 13^{mm} lati, steriliū ad 3^{cm} longi et ad 15^{mm} lati. Petioli 2–3^{mm} longi. Pedunculi ad 2^{cm} longi. Amenta florentia ad 13^{cm} longa et ad 2^{mm} lata.—*P. obcordatæ* Presl verisimiliter proxima sed foliis majoribus et minus profunde emarginatis ab ea discrepans.—S. Rosa, alt. 3,000^{ft}, June 1892, Heyde & Lux, no. 3,454.

Pilea Pansamalana. — Suffrutescent (1.5–2^{ft}); branches several from base, decumbent, simple, terete: stipules minutely triangular; leaves glabrous, punctate and lineolate above, venose beneath, subopposite nerves remote from base and vanishing below apex, crenate-serrate except at base, dimor-

phous and very unequal in the pair; the larger lanceolate to rhomboid-elliptical ($18-36 \times 6-10^l$), tapering each way from middle, apex obtuse, base acutely narrowed into short ($2-3^l$) petiole; the smaller obovate or rhomboid-orbicular, apex rounded, base acute, petiolate: diœcious; pistillate cymes (the only seen) not exceeding petiole of larger leaves, pedunculate, divaricate, flowers pedicellate, interior segment of perianth subequalling the others and minutely cucullate, twice exceeded by staminodes, half as long as obliquely oval (0.75^l) and pubescent achenium.—Nearest to *P. dendrophila* Miq.—On decayed mossy trunks of trees, Pansamalá forest, Depart. Alta Verapaz, alt. 3,800^{ft}, June 1886, von Türckheim, no. 939.

***Pilea riparia*.** — Stem repent, elongate, ligneous, simple branches ascending ($6-12^m$): stipules minute, deltoid; leaves glabrous, thick, subentire, 3-nerved from base to middle on upper surface and nearly to apex on reticulated lower surface; the larger in the pair oblong-elliptical ($3.5-4 \times 1.75^m$), long-acuminate, tapering gradually to short ($2-4^l$) petiole; the other a fourth smaller, obovate-elliptical, abruptly acuminate; cystoliths of upper surface densely stellulate-punctiform, of lower minutely linear, of margins large and fusiform: diœcious; staminate cymes not seen; the pistillate pedunculate, little exceeding petiole, divaricate, interior segment of perianth lightly gibbous on back and scarcely exceeding the others, staminodes as long, oval achenium thrice longer (0.5^l) and smooth.—Nearest to *P. marginata* Wedd.—Specimens of this, as well as also of the other proposed new species except *P. irrorata*, have been compared by Dr. Taubert in the Berlin Herbarium. I am likewise indebted to him for the identification of several other *Pileæ*, difficult of determination without the aid of authenticated material.—On rocks in a stream, Pansamalá, alt. 3,800^{ft}, August 1886, von Türckheim, no. 1,040.

***Pilea irrorata*.** — Herbaceous; stem shortly rooting at base, stout, simple or forked ($1-2^m$): stipules elongate-triangular ($2-3^l$), persistent; petioles long ($1.5-3.5^m$), canaliculate, dilated at base and apex; leaves membranaceous, smooth, ample ($6-9 \times 2-4^m$), elliptical, caudate-acuminate, obtuse, base acuminate, the opposite uniform and nearly equal, sinuate-serrulate above middle, 3-nerved from insertion to apex, transverse veins distinct and subparallel, above punctulate and toward base lineolate, cystoliths scarcely present beneath:

monœcious or diœcious; cymes unisexual, subsessile, bracteose, densely flowered; the staminate semi-globose (5–8^l high), axes explanate, fascicled pedicels filiform (3^l), perianth before anthesis obpyramidate (0.75^l) with inflexed cucullate tips, rudimentary ovary nearly obsolete; pistillate cymes smaller and glomeruliform, staminodes most minute, exterior segments of perianth small.—Distinguished chiefly by the long pedicels of staminate flowers.—Pendent from irrigated cliffs of the Barranca of Rio Samalá, Depart. Retalhuleu, alt. 1,700^{ft}, April 1892, J. D. S., no. 2,751.

Pilea pleuroneura. — Rooting at woody base, ascending (12–18ⁱⁿ), branching composite, branchlets complanate and alate, glabrous, glandulose: stipules minutely semi-obicular; leaves distichous, subsessile, lanceolate (7–9 × 1.5–2^l), the smaller in the pair half as long and elliptical, apex obtuse, 2–5-crenate, the inferior half entire and cuneate, penninerved, the stronger 7–9 nerves ascending to margin, veins immersed, cystoliths present only on upper surface and linear: diœcious; staminate flowers not seen; the pistillate fasciculate at apex of longer (1–1.5^l) peduncle, short pedicels recurved, cucullate segment of perianth twice exceeding the others, achenium obliquely ovate (0.5^l) and rubro-punctate.—Pansamalá, alt. 3,800^{ft}, June 1885, von Türckheim, no. 754.

Pilea senarifolia. — Herbaceous, glabrous; stem repent, branches ascending (12–18ⁱⁿ), opposite or verticillate branchlets 6-alate: stipules scarious, minutely oblong, persistent; petioles short (0.5–1^l), induplicate; leaves 6-verticillate, unequal, obovate-spatulate to obovate-cuneate (3–5 × 1.5–2^l), coarsely incurved-crenate above middle, penninerved, crenations and nerves three to a side, upper surface transversely striolate with fusiform cystoliths: monœcious; unisexual cymes from adjacent axils in the whorl; the staminate twice to thrice exceeding petiole, 2–3-flowered, peduncle and pedicels subequal, perianth in præfloration globose (1^l), tips of segments pileate, rudimentary ovary none; pistillate cymes minute, few-flowered, segments of perianth somewhat unequal.—Anomalous by leaves all strictly verticillate.—On old trunks of trees, Chiul, Depart. Quiché, alt. 8,000^{ft}, April 1892, Heyde & Lux, no. 3,145.

Pilea Quichensis. — Herbaceous; stem simple (20–30ⁱⁿ), slightly pubescent, sulcate: stipules deltoid (1.5^l), decidu-

ous; petioles slender (1-2ⁱⁿ), triquetrous by produced nerves of leaf, estriolate; leaves glabrate, the opposite somewhat unequal, obliquely oblong-elliptical (4-6.5 × 1-2ⁱⁿ), prolonged to a slender (6-9^l) and sharply serrate tip, base acute and induplicate, serrate throughout, 3-nerved to apex, exterior veins all equal and ascending to margin of incurved crenations, interior veins anastomosing, veinlets finely reticulating, pellucid, upper surface striate with small cystoliths, the lower glaucous: monœcious; staminate cymes geminate, shorter than petiole (5-8^l), peduncle bifurcate, flowers single and racemose or few-clustered on long spreading branches; perianth in aestivation oval (1^l) and exceeding pedicel, obtuse segments incrassate at the base and back, stamens twice longer, rudimentary ovary minutely subulate; pistillate cymes from uppermost axils much smaller, in anthesis conglomerate, broadly cucullate segment of perianth thickened and exceeding the scarious exterior ones, ovary slenderly elliptical.—Intermediate between *P. multiflora* Wedd. and *P. falcata* Liebm.—San Miguel Uspantán, alt. 6,500^{ft}, April 1892, Heyde & Lux, no. 3, 147.

PINUS DONNELL-SMITHII Mast., Botan. Gaz. 16: 199.

EXPLANATION OF PLATE II.—Fig. 1, portion of branch with leaf-scars, tufts of leaves, primordial leaves and male flowers, nat. size.—Fig. 2, tuft of leaves with sheath of leaf-scales at the base.—Fig. 3, portion of leaf magn. 4 times, showing lines of stomata and serrations at the edge.—Fig. 3^a, section of leaf magn. 50 diam., showing epiderm, two layers of hypo- or exoderm, stomata, mesophyll with sinuous cells, a triangular pericycle with well marked endoderm and a branched fibro-vascular bundle with phloem towards the dorsal side of the leaf and xylem towards the upper edge. Between the two masses of xylem are several large libriform cells.—Fig. 4, primordial leaf or "squama fulcrans" magn. 4 diam.—Fig. 5, male flower isolated magn. 2 diam.—Fig. 6, stamen from the front and from the back magn. 6 diam.—Fig. 7, stamen from the side magn. 6 diam.—Fig. 8, pollen grain magn. 200 diam.—Fig. 9, ripe cone.—Fig. 10, longitudinal median section of cone.—Fig. 11, detached scale of cone showing apophysis and umbo.—Fig. 12, scale of cone seen from the side.—Fig. 13, young seed.

Dioscorea dicranandra. (§ ALLACTOSTEMON Griseb. in Fl. Bras.)—Glabrous in all parts: leaves orbicular-cordate (5-9 × 4-7ⁱⁿ), abruptly acuminate, membranaceous, pale beneath, pellucid-lineolate, nerves 7-9, the exterior pair 1-furcate, midrib somewhat exceeding stout petiole and thrice longer than approximate basal lobes, sinus broad, transverse veins distinct: spikes solitary, or the fertile 3-5-fasciculate and occasionally furcate, filiform (12-17ⁱⁿ), rachis angulate, bracts broadly oval and long-acuminate, flowers solitary and sessile;

sterile flowers somewhat exceeding bract, perianth $\frac{3}{4}$ -partite, semi-erect segments oblong-lanceolate (1.5^l), distinct stamens a third as long and exceeded by subulate staminodes, anthers bipartite-locular and shorter than filament, rudimentary ovary none; fertile flowers less approximate, segments of perianth linear (1.5^l) and equalling tube and bract, connate styles very short (0.5^l) and twice exceeding effete stamens, deflected stigmas bilabiate: capsules not seen.—The character is drawn from specimens collected at two localities and respectively of different sexes, but matching in form and anatomy of foliage; in each the flowers are of novel structure.—Cerro Gordo, Depart. S. Rosa, alt. 3,500^{ft}, Sept. 1892, Heyde & Lux, no. 3,869; Rinconcito, Depart. S. Rosa, alt. 4,000^{ft}, Nov. 1892, Heyde & Lux, no. 4,359.

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